Executive summary

Expansion cum modernization of Sugar unit from 4800 TCD to 8000 TCD along with Cogeneration unit from 22 to 45 MW and Distillery unit from 30 KLPD to 95 KLPD
At village Belewadi Kalamma & Dhamane, Tal. Kagal, Dist. Kolhapur, Maharashtra

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Sar Senapati Santaji Ghorpade Sugar Factory Ltd.

Prepared By: SMS Envocare Ltd., Pune

EXECUTIVE SUMMARY

1. INTRODUCTION

This chapter executes summary of whole EIA report which includes project description in brief, environmental setting in 10 km radius, impact identification and mitigation measures and environmental management plan. Moreover brief information of Post mentoring program and risk assessment is also furnished in this chapter. An EIA report for proposed project has been prepared as per the ToR issued on dated 26th May by MoEF&CC and as per generic structure as per EIA notification 2006 and amendment thereof. EIA report prepared by SMS Envocare Ltd., Pune (QCI-NABET accredited consultant).

2. LOCATION OF THE PROJECT

The project site is located at G.No. 284, 285, 287, 288, 281 (P), 280 (P), & 283 (P) of village Dhamane & 449, 454, 456, 457, 458, 460, 462, 464, 465 (P), 466, 467, 469, 470, 471 village Belewadi Kalamma, Tal. Kagal, Dist. Kolhapur, Maharashtra. Site is geographically located at Latitude: 16°16' 55.00" N, Longitude: 74°14' 48.56" E and 685 m above MSL.

The land requirement for proposed industry unit is already in possession. Connectivity towards proposed site is NH-4 (Mumbai- Chennai) 17.31 km towards north east, Belewadi Kalamma-Dhamne road adjacent to the factory, Gadhinglaj-Gargoti road 1.64 km, Nipani- Ajara Link road 4.45 km. There are no Tropical Forest, Biosphere Reserve, National Park, Wild Life Sanctuary and Coral Formation Reserves within 10 km Influence Zone. River Chikotra, is flowing at a distance of 1.0 km in West direction from the project site. The general location map is given in **Fig 1** and **Fig 2** showing project site boundary on Google map. Plant Layout of proposed project is given in **Fig 3.**

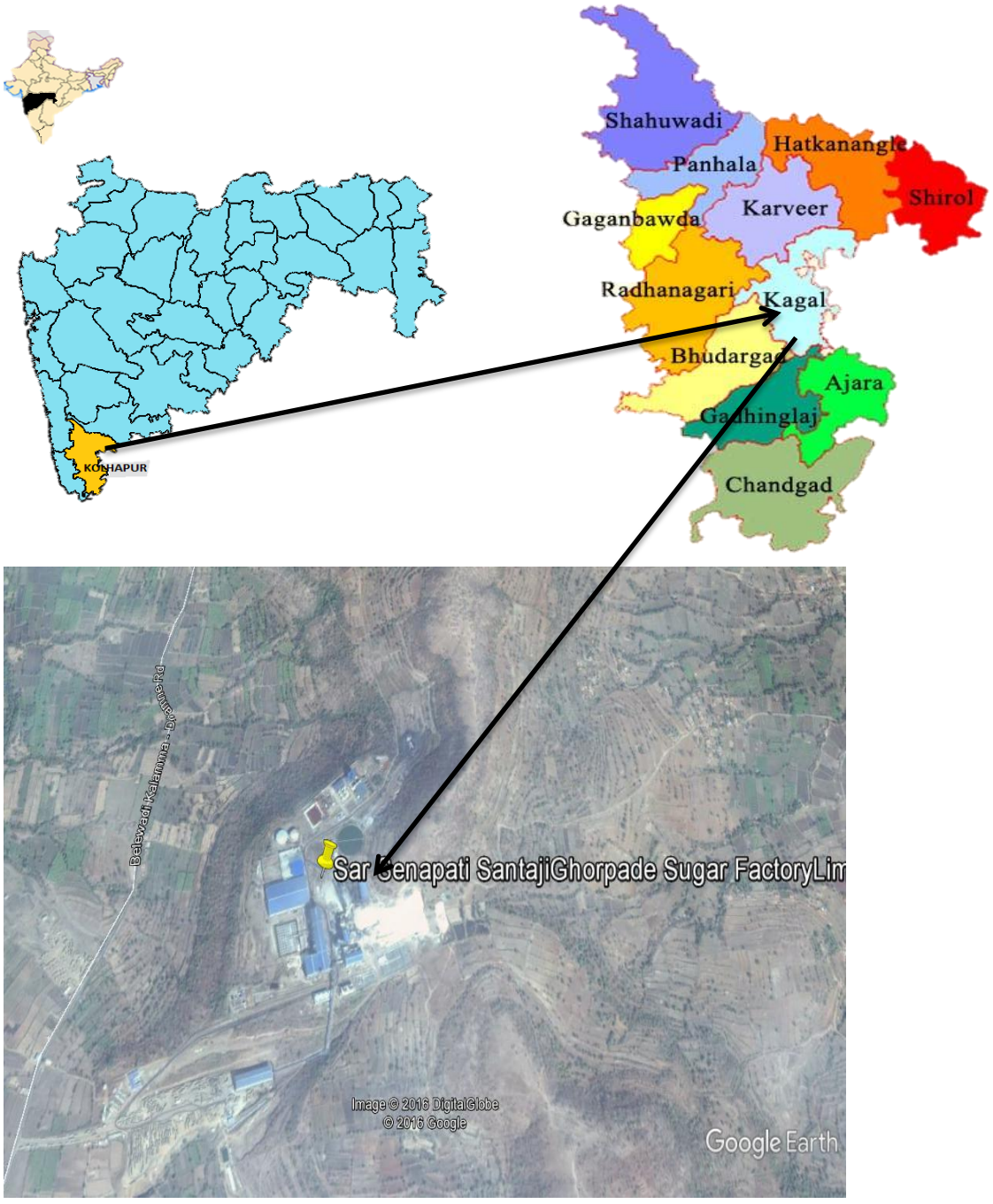

Figure 1: Proposed project location map

Figure 2: Proposed Project locations Sugar, Cogeneration and Distillery

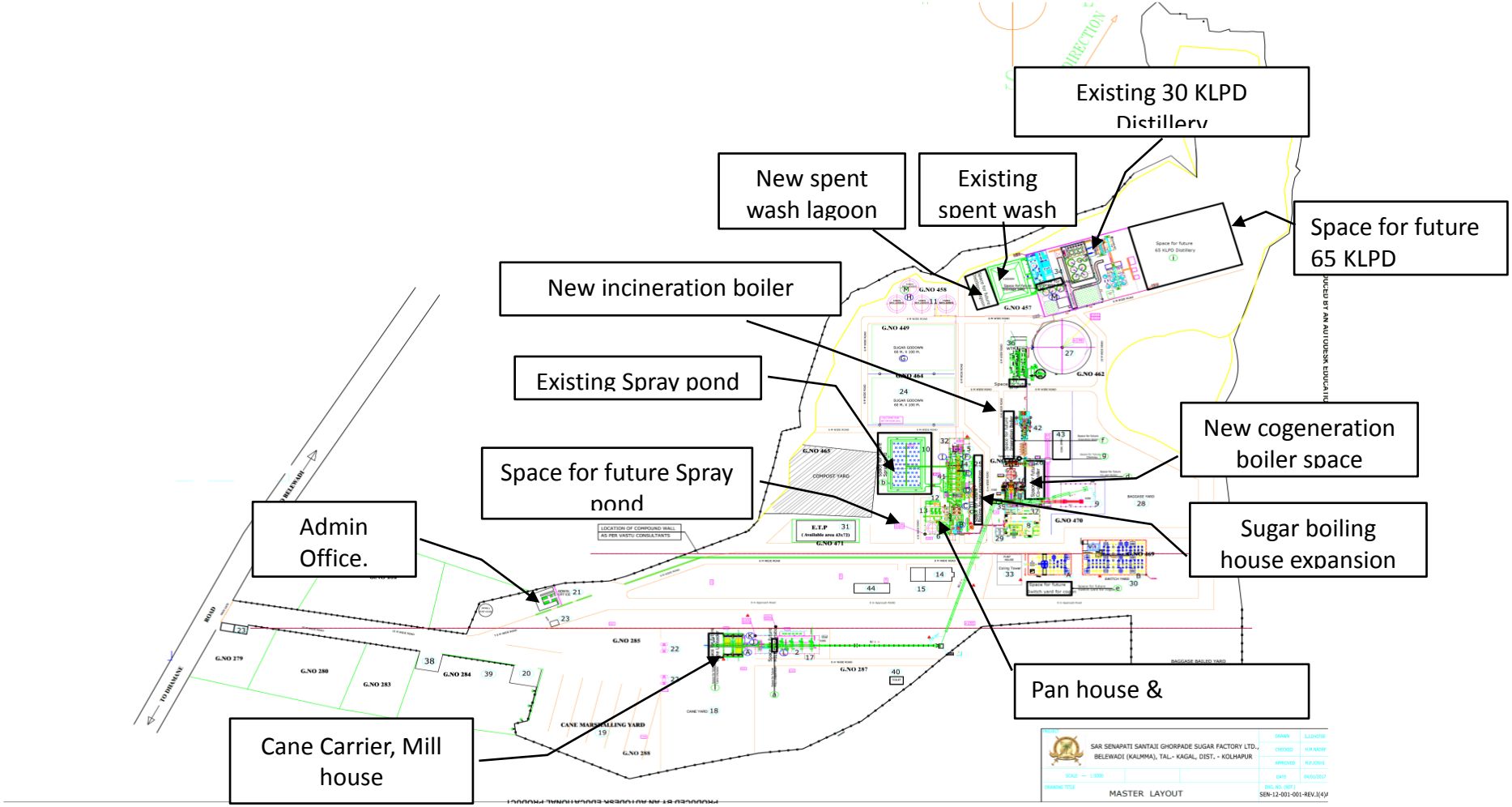

Figure 3: Plant Layout

Table 1: Exiting land bifurcation

NO	DESCRIPTION	SIZE IN Mtr.	AREA Sq. Mtr.
01	CANE CARRIER	60.00 x 25.00	1500.00
02	MILL HOUSE	78.00 x 24.00	1872.00
03	EVAPORATION HOUSE	36.00 x 24.00	864.00
04	PAN HOUSE	60.00 x 24.00	1440.00
05	SUGAR HOUSE	30.00 x 24.00	720.00
06	CLARIFICATION HOUSE	36.00 x 30.00	1080.00
07	BOILER HOUSE	52.88 x 16.40	867.23
08	POWER HOUSE	30.00 x 42.00	1260.00
09	RETUEN BAGGASSE CARRIER	109.82 x 5.15	565.57
10	SPRAY POND	69.00 x 41.50	2863.50
11	MOLASSES TANKS	(Ø 32.00)	150.00
12	LIME & SULPHER GODOWN	19.40 X 7.00	135.80
13	SULPHUR HOUSE	24.00 x 12.00	288.00
14	GENERAL STORE	36.00 x 18.00	648.00
15	OPEN STORE YARD	72.00 x 22.40	1612.80
16	BOILER FAN HOUSE		
17	WORK SHOP	18.00 x 19.50	351.00
18	CANE YARD		
19	CANE MARSHALLING YARD		
20	CANE OFFICE	21.90 x 6.54	143.22
21	ADMINISTRATIVE BUILDING	35.00 X 15.00	525.00
22	WEIGH BRIDGE	4.06 x 4.06	16.48
23	SECURITY	4.06 x 5.26	21.35
24	SUGAR GODOWN	102.0x60.0x2	12240.00
25	CHIEF CHEMIST & ENGINEER	18.00 X 5.00	90.00
26	CHIMNEY	Ø 5.2	
27	G.S.R	Ø 70.0	
28	BAGGASE YARD	72.00 X46.00	3312.00
29	D. G. SET	9.56 X 4.46	42.67
30	SWITCH YARD A - 220 KV	52.50 X 28.00	1470.00
	SWITCH YARD B	77.53 X 46.00	3566.38
31	E.T.P.	72.00 X 43.00	3096.00
32	GUNNY BAG GODOWN	12.00 X 6.00	72.00
33	COGEN COOLING TOWER	40.00 X 30.00	1200.00
34	SPACE FOR ETHANOL	184.85 X 100.0	18485.00
35	FEED WATER TANKS & PUMP		
36	EQUIPMENT (WTP) A	23.00 X 42.00	966.00
	CLARIFIER & CLEAR WATER TANK (WTP) B	27.00 X 16.230	438.21
37	TRANSFORMER AREA	21.00 X 8.00	168.00
38	CANTEEN	10.00 X 25.00	250.00
39	SHETKARI NIWAS	10.67 X 6.10	65.08
40	TOILET BLOCK	8.00 X 6.42	51.36
41	PUMP HOUSE FOR SPRAY POND	14.00 X 6.00	84.00
42	INCIRATION BOILER	45.00 X 90.00	4050.00
43	COAL SHED	36.00 X 21.00	798.00
44	FACTORY VEHICAL PARKING	36.00 X 18.00	648.00
		TOTAL AREA IN SQ.M.	68013.13

Table 2: Proposed expansion land bifurcation

ITEM	DESCRIPTION	SIZE IN Mtr.	AREA Sq. Mtr.
a	MILL EXPANSTION	24.00 x 24.00	576.00
b	SPRAY POND	30.00 x 41.00	1200.00
c	BOILING HOUSE	130.00 x 80.00	10400.00
d	COGEN BOILER	52.88 x 16.40	867.232
e	SWITCH YARD FOR COGEN	52.50 x 28.00	1470.00
f	INSERTION BOILER	45.00 x 90.00	4050.00
g	CHIMNEY	Ø3.2	
h	WTP	40.00 x 40.00	1600.00
i	DISTILLERY 65 KLPD	200.00 x 125.00	25000.00
j	DISTILLERY LAGOON	50.00 x 50.00	2500.00
k	STORAGE TANK	10.00 x 09.00	90.00
l	CANE UNLOADER	160.00 x 150.00	24000.00
M	MOLASSES TANK	Ø32.00	150.00

3. PROJECT INFORMATION IN BRIEF

Table 3: Project in breif

Sr. No.	Particulate	Description		
1.	Project	Expansion cum modernization of sugar from 4800 to 8000 TCD along with cogeneration expansion from 22 MW to 45 MW and distillery from 30 KLPD to 95 KLPD		
2.	Available land	Total plot area : 85 acres Sugar and cogeneration: 33 acres Distillery area: 15 acres Other Misc: 10 acres Green belt area: 27 acres		
3.	Product			
		Cane crushing	4800 TCD	8000 TCD
		Sugar	600 TPD (12.05% on cane)	1000
		Bagasse	1368 TPD	2280 TPD
		Molasses(4.0% on cane)	192	320 TPD
		Press mud(4 % on cane)	192 TPD	320 TPD
		Power generation	22 MW	45 MW
		Pure Rectified Spirit/ Impure Spirit/ENA	30.0 KLPD	95 KLPD
4.	Operation days	Sugar factory season: 160 day Cogeneration : 300 (Seasonal operational days 160 and off season operational days 140) Distillery: 300 days		
5.	Sugarcane required	Existing: 4800 TCD Proposed : 3200 TPD		
6.	Molasses requirement	Existing: **113** TPD for 30 KLPD Proposed: 355 TPD for 95 KLPD (Molasses available with Factory is 320 TPD remaining 35 TPD molasses will be procured from the nearby factory). **Molasses supply assurance letter is available with factory**		
7.	Water requirement	**Sugar and cogeneration** • For season Existing and proposed 288 CMD • Offseason Existing and proposed 110 CMD **Distillery** • For season		

Sr. No.	Particulate	Description		
		Existing and proposed 60 CMD • Offseason Existing and proposed 760 CMD		
8.	Source of water	Chikotra river in west direction. Permission is available from Executive Engineer, Kolhapur Irrigation department, Kolhapur		
9.	Boiler	Exiting boiler: 120 TPH X 1 Proposed: 120 TPH X 1 Distillery existing incineration boiler 10 TPH Proposed incineration boiler 20 TPH (2.2 MW TG)		
10.	TG	Exiting TG : 22 MW Proposed TG: 20.8 MW Distillery incineration boiler 2.2 MW TG		
11.	DG	Two-diesel generator sets of 1010 KVA		
12.	Electricity requirement			
		Season		
		1.	**Total power generation**	**43.070 MW**
		2.	Sugar plant including boiler(New + Old)	8.184 MW
		3.	Cogeneration plant (New + Old)	3.61 MW
		4.	Office /Colony / other	0.20 MW
		5.	Existing distillery and spent wash boiler	0.80 MW
		6.	**Total captive power consumption**	**12.794 MW**
		7.	**Surplus exportable power**	**30.276 MW**
		8.	Power requirement for proposed distillery will be recovered from new 20 TPH boiler	2.2 MW
		Off season		
		1.	Power Generation form TG set	22 MW
		2.	Cogeneration plant	1.96 MW
		3.	Office /Colony / other	0.20 MW
		4.	Distillery and spent wash boiler	0.80 MW
		5.	Total captive power consumption	2.96 MW
		6.	Surplus exportable power	20.04 MW
13.	Fuel- Bagasse			
		1.	Bagasse production(30% on cane)	99.90 TPH
		2.	bagasse available for the steam generation 27.5% on cane	93.775 TPH
		3.	Bagasse used for 120 TPH existing boiler	44.98 TPH

Sr. No.	Particulate	Description		
		4.	Bagasse used for 120 TPH new boiler	42.81 TPH
		5.	Total bagasse required as fuel for boiler	87.79 TPH
		6.	Saved bagasse (1.75% on cane) during season	5.985 TPH i.e. 21000 T
		1.	Total bagasse saved during the season	21000 T
		2.	Bagasse used for 120 TPH x 01 no. boiler having 88.25 TPH load (steam to bagasse ratio 2.65) * Remaining bagasse will be procured from other nearby Industry.	33.30 TPH
14.	Coal	Existing 30 KLPD distillery Coal: 1.25 TPH Proposed 65 KLPD distillery Coal : 2.75 TPH		
15.	Steam			
		1.	Steam from existing boiler 120 TPH	113.45 TPH
		2.	Steam from proposed 120 TPH	119.23 TPH
		3.	Existing and proposed Steam requirement	20 TPH
16.	Total effluent generation	**Sugar + Cogeneration Factory** Existing effluent generation: 500 CMD Proposed generated effluent: 300 CMD ETP capacity: 800 CMD **Distillery** Existing Condensate effluent generation 245 CMD Existing CPU : 288 CMD Proposed Condensate effluent generation 530 CMD Proposed CPU capacity: 640 CMD (Process condensate, blow down, excess condensate Misc.)		
17.	Effluent treatment system	Existing 500 CMD ETP from sugar unit & co-generation power plant is being treated in proposed ETP capacity 800 CMD and treated water is recycled/reused in greenbelt development and ferti-irrigation. Spent wash generation will be 760 CMD. Generated spent wash will be concentrated in integrated evaporation and burn in spent wash fired boiler.		

Sr. No.	Particulate	Description
18.	Ash	**Sugar** • Existing bagasse ash generation: 20-22 TPD **(2% on total bagasse consumption)** • Proposed bagasse ash generation: 20 TPD **Distillery** • Coal ash from existing distillery: 7.5 TPD**(Max 25 % of coal consumption)** • Coal ash from proposed distillery: 16.5 TPD • Spent wash ash from existing distillery: 9-10 TPD **(Max 15% of spent wash consumption)** • Spent wash ash from proposed distillery: 20 TPD Bagasse and spent wash ash collected from the furnace bottom hoppers and high potash content in the bagasse ash will be used as manure. Coal ash will be sold to the brick manufacturer.
19.	ETP sludge	The sludge from primary clarifies, settling tank and secondary clarifier will be sent to sludge drying beds. Sludge will be dried in natural heat of sunlight. The dried cakes will be scrapped off periodically and can be utilized for as manure.
20.	Air pollution control measures	Proposed: Electrostatic precipitators Existing: Electrostatic precipitator Proposed Stack height: 85 m Existing stack height: 85 m
21.	Man-power	For Sugar and cogeneration 80-100 Skilled and unskilled For proposed distillery 100 Skilled and unskilled
22.	Total project cost	Sugar expansion: 4987.50 lacs Cogeneration expansion: 6452.00 lacs Project cost of the distillery: 6240 lacs.
23.	Total EMP cost	Total 19.37 cr.
24.	Nearest Village	Belewadi Kalamma, Dhamne
25.	Nearest Town / City	Nipani: 20 km, Kagal : 35 km
26.	Nearest National Highway	NH-4 (Mumbai- Chennai) 17.31 km towards north east
27.	Nearest Railway station	Chhatrapati Shahu Maharaj Terminus railway station 46.15 km
28.	Nearest Airport	Kolhapur airport: 42.67 km Belgavi airport: 62 km

Sr. No.	Particulate	Description
29.	National Parks, Reserved Forests (RF) / Protected Forests (PF), Wildlife Sanctuaries, Biosphere Reserves, Tiger/ Elephant Reserves, Wildlife Corridors etc. within 10 km radius	Higher Elevation of Village Murukate 8.30 km is at the end of Eco-sensitive area declared in MoEFCC notification S.O. 2435(E).–4th September, 2015. Latitudes and Longitudes of prominent points on the outer boundary of Eco-sensitive area point number 94, Lat. 74.1853 Long. 16.2414.
30.	River / Water Body (within 10 km radius)	Chikotra river : 1.16 km in West and in NW

11.3 RAW MATERIAL

Table 4: Raw Material

Sr. No.	Raw material	Existing	Proposed	Storage	Source	Mode of Transport
1.	Sugarcane(**TPD)**	4800	8000	Cane yard	Command Area	Trucks, tractors &Bullocks carts
2.	Coal(TPH)	1.25	2.75		Nearby Market	Trucks
3.	Lime (TPD)	6.72	11.2T	20 TGodown	-do-	Trucks, Tempos
4.	Sulphur(TPD)	1.92	3.2	20T Godown	-do-	Trucks, Tempos
5.	Caustic soda	0.15	0.32	20 TM.S. tank	-do-	Trucks, Tempos
6.	Hydrochloric acid	0.06	0.1	10T Lined tank	-do-	Trucks, tanker
7.	Sodium chloride	0.5	0.83	20T carboys	-do-	Trucks
8.	Phosphoric acid	0.135	0.225	5 T carboys	-do-	Trucks, Tempos
9.	Oil, grease and oil coolant	0.135	0.250	10T drums	-do-	Lorry, tanker, Trucks,
10.	Sugar(TPD) (12.05% on cane)	600	1000	Go-down	-	Lorry, Trucks
11.	Bagasse(TPD)	1368	2280	Bagasse Yard	-	Belt conveyor
12.	Press mud(TPD)	192	320	Yard	-	Tractors
13.	Molasses(TPD)	192	320	M.S. tank	-	-

11.3.1 Water requirement

Table 5: Water Balance

Total fresh water requirement for current integrated project is 492 CMD for season and 870 CMD for off season. The water will be sourced from Chikotra River for which the permission has been obtained.

Sr. No.	Description	Quantity	
1.	No Fresh water required for Sugar factory	Existing excess water around 600 CMD is provided to distillery, and 760 CMD will be providing to future expansion of distillery.	
2.	Distillery and Cogeneration	**For Season**	**For Off Season**
3.	Existing Cogeneration	144 CMD	110 CMD
4.	Total Cogeneration (Ext. + Proposed)	288 CMD	110 CMD
5.	Total fresh water requirement for distillery (Existing + Proposed)after recycling	60 CMD	760 CMD
6.	Total water requirement	492 CMD	870 CMD

11.4 MANUFACTURING PROCESS

Sugar

The major units of operations of sugar factory are, Extraction of Juice, Clarification, Evaporation, Crystallization, and Centrifugation.

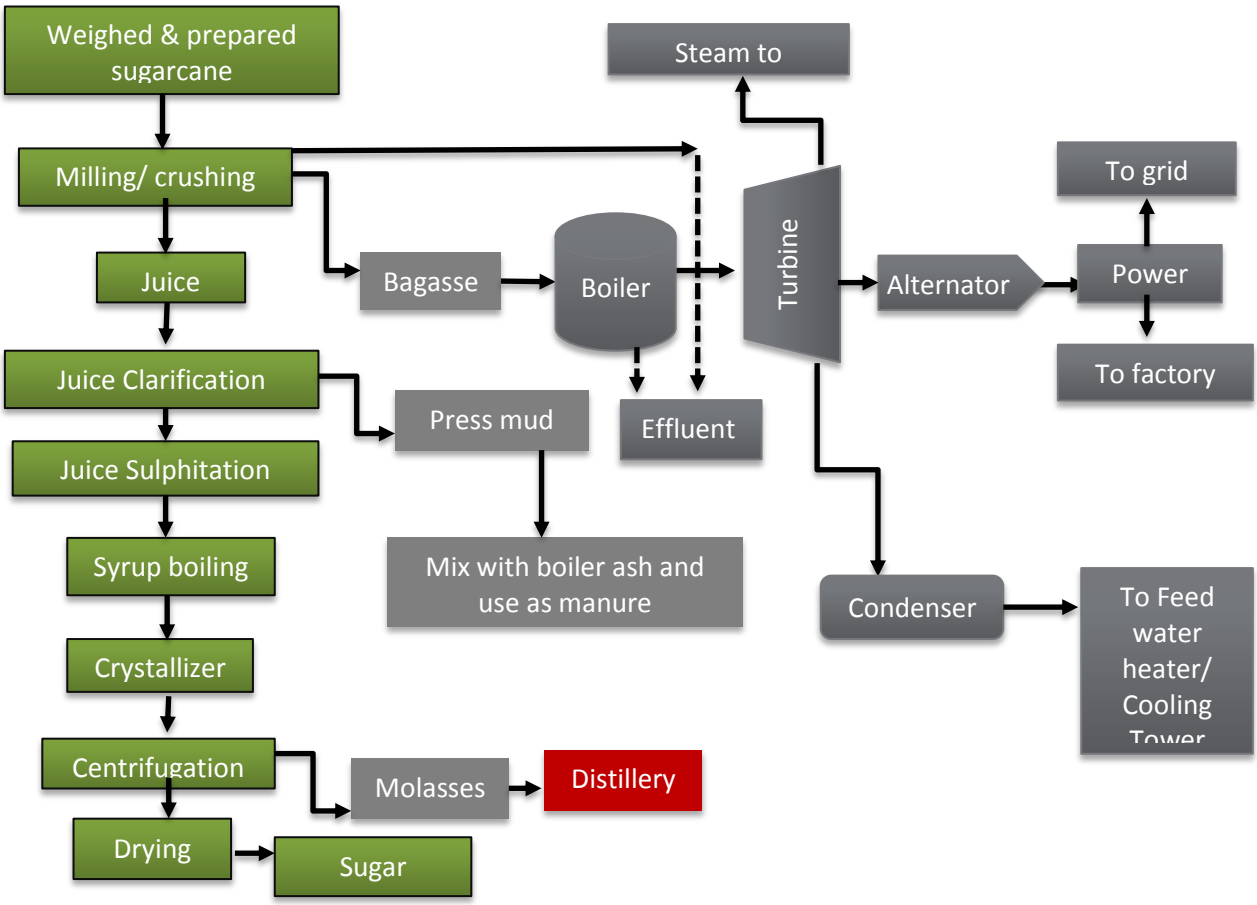

Figure 4: Manufacturing Flow chart of Sugar cane and Cogeneration power plant

Distillery

Alcohol will be manufactured by continuous fermentation process. The main steps in this operation are as follow:

- Feed preparation and weighing
- Dilution: Preparation of molasses for fermentation by appropriate dilution with water
- Fermentation: Production of alcohol from fermentable sugars in molasses solution with the help of yeast
- Distillation: Product recovery through distillation processes

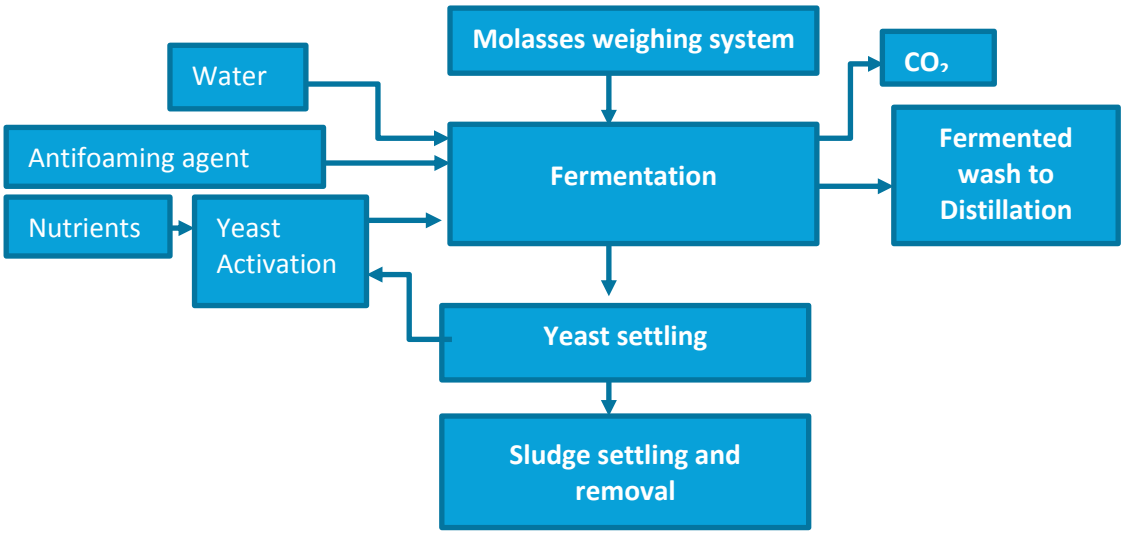

Figure 5: Fermentation Flow chart

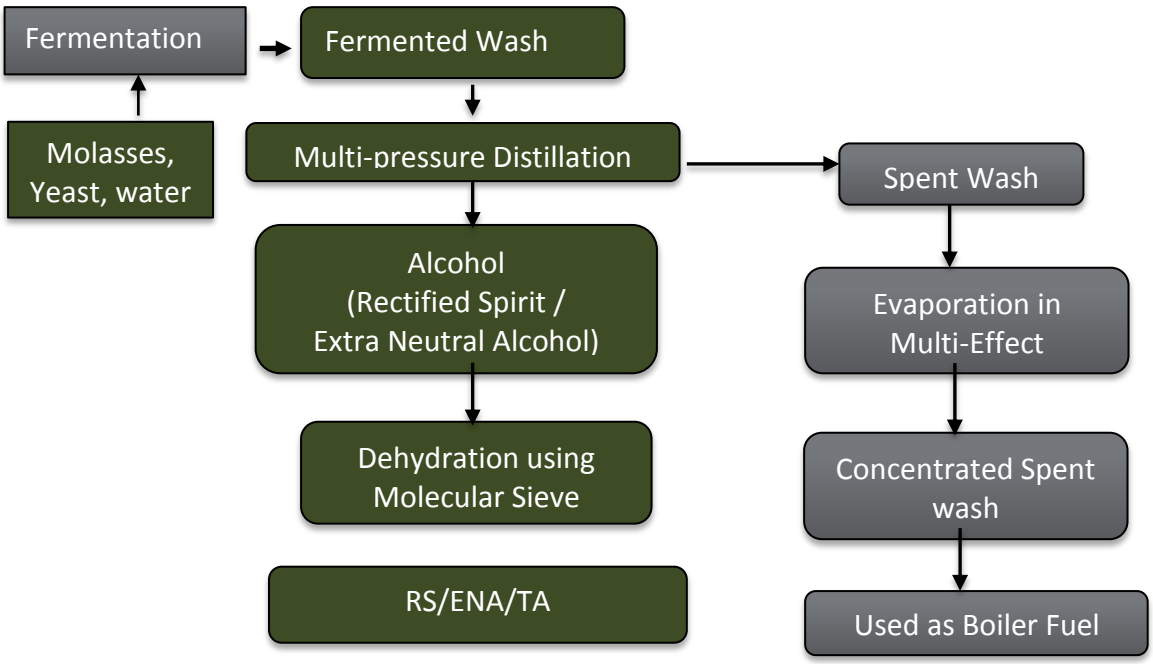

Figure 6: Process flow chart for Distillery operation

5. BASELINE ENVIRONMENTAL SETTINGS

Table 5: Environmental setting

Sr. No.	Aspects	Description		
1.	Project Location	Sar Senapati Santaji Ghorpade Sugar Factory Limited (SSSGSFL) is a sugar factory located at village Belewadi Kalamma, Tal. Kagal, Dist. Kolhapur in Maharashtra State.		
2.	Geographical Coordinates	Latitude: 16°16' 55.00" N, Longitude: 74°14' 48.56" E and 685 m above MSL		
3.	Toposheet number	47L/3, 47L/4, 47 L/7, 47L/8		
4.	Nearest Town	Nipani: 20 km, Kagal : 35 km		
5.	Nearest airport	Belgavi airport: 62 km		
6.	No. of Villages in 10 Km Study area	26-30 villages		
7.	Precipitation	**Annual Mean: 1034 mm**		
8.	Temperature	Average 11.8°C to 36.9°C		
9.	Humidity	55% to 61.3%.		
10.	Wind Direction	Annual West to East Study period : West to East		
11.	Soil Type	Heavy clay type		
12.	Ambient Air Quality	8 Locations 24 hourly samples Twice a week for 3 months(in µg/m$^{3)}$	PM10	40.3- 71.7 µg/m^3
			PM2.5	17.2- 49.2 µg/m^3
			SO_2	4.8-19.2 µg/m^3
			NO_x	13.9-29.2 µg/m^3
			CO	0-0.4 mg/m^3
13.	Water Quality (Ground & Surface)	Once in season at 9 locations(Physical, chemical and biological parameters)	Colour	All parameters are within limit except MPN count and E-Coli in surface water.
			pH	
			TDS	
			COD	
			E-Coli	
14.	Noise Quality	Once in season at 8 Locations (Noise levels in dB(A))	Average Day	39.52- 67.4
			Average Night	34.7-59.6
15.	Nearest Water body	Chikotra river 1.0 km in West direction		
16.	Nearest Village	Belewadi Kalamma, Dhamne, Bamni		
17.	Nearest Reservoir	Chikotra Dam is Located at a distance of 7.62 km in the Southwest direction.		
18.	Nearest Railway station	Chhatrapati Shahu Maharaj Terminus railway station 46.15 km		

Sr. No.	Aspects	Description
19.	Nearest Highway	-4 (Mumbai- Chennai) 17.31 km towards north east
20.	Nearest Heritage site	No heritage site in 10 km radius
21.	State boundaries	Maharashtra- Karnataka interstate boundary, which is of 8.81 km away from proposed site.
22.	Nearest densely populated place	No densely populated place in 10 km
23.	Eco-sensitive area	There are no tropical forest, biosphere reserve, national park, wildlife sanctuary, coral formation, defense installations, recreational sites, holiday resorts, pilgrimage site, historically important structures, monuments, etc. within 10 km of the study area Higher Elevation of Village Murukate 8.30 km is at the end of Eco-sensitive area declared in MoEFCC notification S.O. 2435(E).–4th September, 2015 Latitudes and Longitudes of prominent points on the outer boundary of Eco-sensitive area point number 94, Lat 74.1853 Long 16.2414 • Begavade protected forest 7.8 km in SW direction Murkute reserve forest 8.8 km in WSW in direction
24.	Nearest IMD station	At Belagaum 54 km (Station ID- 43197), Kolhapur 46 km in North (Station ID-46157),

6. Anticipated Environmental Impacts

Table 6: Anticipated Impacts

Sr. No.	Environmental Facets	Anticipated Impacts
1.	Air Environment	Probable increase in concentration of air pollutants due to process, fugitive and utility emissions.
2.	Water Environment	Generation of industrial & domestic wastewater.
3.	Land Environment	Impacts on land due to improper disposal of hazardous/ soild waste.
4.	Ecological Environment	Positive as greenbelt of appropriate width will be developed and maintained by the company in the area. No impacts are envisaged on aquatic flora & fauna as there will be zero effluent discharge outside the plant premises.
5.	Social Environment	Overall development of the area in respect of the infrastructure development, educational growth,

		health facilities etc.
6.	Economic Environment	Positive impacts on economy of the region and the country as the Alcohol will be exported and revenue generation.
7.	Noise Environment	Minor increase in noise level within the project area.
8.	Occupational Health & Safety	Major health hazards are identified in worst case scenario.

7. Additional Studies

The following Additional Studies were done in reference to the awarded Terms of References issued by MoEFCC, New Delhi vide file no. J-1101/45/2017-IA II (I) dated 26/05/2017.

- Public Consultation
- Risk Assessment for storage and handling of alcohol and mitigation measure due to fire and explosion and handling areas.

8. ENVIRONMENT MANAGEMENT PLAN

8.1 Air pollution Management

- Baseline ambient air quality monitoring has been carried out during the month of March 2017 to May 2017. It is observed that the concentrations of PM_{10}, $PM_{2.5}$, SO_2 and NOx are well within the prescribed limits as per the National Ambient Air Quality Standards. The major sources of air emissions from the proposed projects include non-point and point source emissions.
- The major sources of air pollution from the proposed projects will be from flue gas emission, process emission and vehicular emissions.
- Electrostatic Precipitator will be provided as air pollution control equipment for proposed boiler. Existing sugar and cogeneration boilers are attached with Electrostatic precipitator. The emissions from the boiler are passed through ESP before releasing into atmosphere through the stacks. Existing Stack height is 85m. The proposed boiler stack heights of 85 m will be provided for proper dispersion of the air pollutants
- Fly ash collection system will be installed with ESP. Bag filters/ dust collectors and proper ventilation will be installed wherever particulate matter emission is likely to be occurred.

- To control the vehicular pollution, control measures will be implemented such as periodical check of Vehicle for its fitness and PUC certificates. Observance of periodical maintenance schedule and its proper implementation.
- Factory is planning to installed CO_2 recovery plant.

8.2 Noise pollution management

- Construction work will be carried out during day time only
- The workers working near Noise production machineries will be provided with ear plugs
- Construction equipment and vehicles will be maintained in good running condition
- Noise producing machinery will be placed in acoustic enclosures/acoustic rooms to reduce the noise levels
- Workers working near noisy area shall be provided with ear plugs
- Roads will be maintained in good condition to reduce the noise due to traffic
- Green Belt will be developed in and around the project site

8.3 Waste water management

- Spent wash generated during the process of distillation will be treated in multiple effective evaporators to concentrate the spent wash and it will be used in boiler as a fuel.
- The condensate generated during the process of Multiple Effective Evaporators will be reused in the process consequently decreasing the net water requirement.
- Total effluent quantity from existing sugar unit and cogeneration unit will be 800 CMD Effluent will be treated in 800 KLD ETP and treated effluent will be use gardening and recycled in the process.

8.4 Land Environment /Solid hazardous waste management

- The zero discharge system will be implemented for proposed expansion of distillery.
- The solid waste generations from the existing sugar factory and distillery are sugarcane trash, bagasse, press mud, ash & ETP and yeast sludge are the major source of land

pollution, however factory has provided proper shed to bagasse, ash storage area, and press mud. Press mud will be sold to the farmer as manure. Sugarcane is an excellent biomass resource; Cane trash's calorific value is similar to that of bagasse. Hence it is mixed with bagasse and burnt in the boiler as a fuel. Ash generated from the bagasse is rich in potash; hence it is sold to farmers as manure.

- Coal ash from the boiler will be sold to the brick-manufacturing unit. Spent wash ash and Bagasse ash will be sold to farmer as it is rich in potassium. Bagasse ash is partly send to the brick manufacturer
- The Yeast sludge and sludge from ETP can be used as manure

Table 7: Quantification of Solid Waste

Sr. No.	Type of waste	Quantity		
		From existing	Proposed	
1.	Press mud	192 TPD	320 TPD	Press mud will be sold to the farmer as manure.
2.	Yeast sludge	3 TPD	6.5 TPD	Sludge (Yeast and ETP) will be dried and used as fertilizer or it will be incinerated along with spent wash in the boiler.
3.	ETP sludge	0.025 TPD	0.04 TPD	
4.	Ash	From Spent wash: 9-10 From Coal: 7.5 TPD Bagasse ash: 20-22 TPD	From Spent wash: 20 TPD From Coal: 16.5 TPD Bagasse ash: 20-22 TPD	Coal ash and bagasse ash (partly) will be sending to brick manufacturer, bagasse ash will be sold to farmer as manure.
5.	Domestic	Negligible	Negligible	Local waste collection system
6.	Spent oil	Negligible	Negligible	Authorized recycler

8.6 Odor Management

Anticipated odor generation sources will be molasses, fermentation unit, spent wash, ETP septic tank, Yeast storage & ETP sludge.

Following control measures shall be implemented to avoid the odor in the atmosphere:

1. Better house-keeping
2. Whole process is work under closed conditions, close pipeline.

3. Spent wash from evaporation would be in a closed tank and directly send to the incineration in boiler.
4. No bio-methanation will be adopted.
5. Fermentation unit will be provided with proper cover to avoid the spread of odor and regular steaming of all fermentation equipment's; temperature will be kept under control during fermentation to avoid inactivation/killing of yeast; staling of fermented wash would also be avoided.
6. Use of mill sanitation biocides to minimize the growth of aerobic /anaerobic micro–organisms.
7. Regular use of bleaching powder in the drains to avoid generation of putrefying micro-organisms.
8. ETP and Yeast sludge will be used as manure.
9. Steaming of major pipelines
10. Proper operating condition will be maintained.
11. Proper cleaning of drains.
12. Efficient operation of ETP.
13. Well planned Greenbelt will be developed in and around the plant premises to suppress the odor.

8.7 Biological Environment Management

8.8 Greenbelt Development

Development of greenbelt in and around the industrial complex is an effective way to attenuate air pollution. The degree of pollution attenuation depends upon height, width, foliage, surface area of leaf and density of planted trees. Greenbelt will be developed as per CPCB guidelines. SSSGSFL is already developing a green belt in 27 acres (~33% of the total 85 acre area)of land and proposed to enhance green belt around the factory in future coming year by 1-2 acres. Approximately more than 10000 Trees will be planted around the distillery unit and around the existing sugar and cogeneration unit. Factory has already done extensive tree plantations around the factory. Photographs of tree plantation are given below. Factory has run the tree

plantation program and planted more than 10000 trees in and around the factory. The plant species will be selected according to CPCB guidelines and pollutant tolerance capacity of specific Tree.

8.9 Socioeconomic development

- All safety signs will be placed at proper location.
- First aid kits will be made available at every department
- Pre-employment Medical checkup and periodical medical checkup shall be undertaken to know the occupational health hazards at the early stage.
- Work permit system will be introduced to avoid the entry or un-authorized working to avoid the incidences which can lead to the accident if proper care is not taken
- All arrangement required for Fire hydrant system shall made at every vulnerable location to have the firefighting facility.
- Apart from above, all required Fire Extinguishers shall be provided at appropriate locations
- All staff and workers will be trained in firefighting operations and emergency preparedness plan or to tackle the accident
- Apart from all engineering control measures, if required necessary PPEs shall be provided as protection measures to the employees.

Good housekeeping also plays important role in avoiding the undesirable incidences / accidents, hence good housekeeping practices will be employed throughout the Factory premises.

9. ENVIRONMENTAL MONITORING PROGRAMS

Table 8: Environmental monitoring schedule

Sr. No.	Particulate	Parameters	Number of location	Frequency
1.	Ambient air quality	PM_{10}, $PM_{2.5}$, SO_2, NOx, CO, etc.	Ambient air quality at minimum 3-5 locations. 1 location within the plant premises, 1 location in upwind, 1 location in downwind direction and 1 location in cross wind direction.	Monthly
2.	Stack gas	PM, SO_2 and NOx	Number of stacks	Monthly
3.	Work place	$PM_{2.5}$, SO_2, NOx, CO, O_3	Process emission in workplace area/plants (for each area/plant minimum 2 locations and 1 location outside plant area near vent)	Monthly
4.	Waste water	pH, EC, SS, TDS, O&G, Ammonical Nitrogen, COD, BOD, Chloride, Sulphides etc.	Wastewater from all sources. Inlet & outlet of ETP, Condensate treatment plant	Monthly
5.	Surface water and ground water	pH, Salinity, Conductivity, TDS, Turbidity, DO, BOD, Phosphate, Nitrates, Sulphates, Chlorides, Total Coliforms (TC) & *E.Coli*	3-5 location Ground as well as Surface water	Half yearly
6.	Solid waste	Ash	• Process dust generated sludge and ash. • Before used as manure if used manure	Monthly
7.	Noise	Equivalent noise level - dB (A) at min. Noise Levels measurement at high noise generating places as well as sensitive receptors in the	5 location At all source and outside the Plant area.	Monthly

Sr. No.	Particulate	Parameters	Number of location	Frequency
		vicinity		
8.	Green belt	Number of plantation (units), number of survived plants/ trees, number of poor plant/ trees.	In and around the plant site	Monthly
9.	Soil	Texture, pH, electrical conductivity, cation exchange capacity, alkali metals, Sodium Absorption Ratio (SAR), permeability, porosity.	2-3 near Solid/ hazardous waste storage. At least five locations from Greenbelt and area where manure of biological waste is applied. Near spent wash storage lagoon	Quarterly
10.	Occupational health	Health and fitness checkup of employees getting exposed to various hazards and all other staff	All worker	Yearly/ twice a year

10. ENVIRONMENT MANAGEMENT COST

Table 9: Environment Management Cost

Sr. No	Description	Capital Cost (Rs. in lakhs)	Recurring Cost (Rs. in lakhs)
1.	Air Pollution Control	1400	10
2.	Water Pollution Control	250	5
3.	Sugar ETP	155	0.5
4.	Solid waste Management	-	7
5.	Environmental Monitoring and Management	40	3
6.	Rainwater Harvesting	15	4
7.	Occupational Health	30	4.8
8.	Green belt development	10	3.5
	Total	**1900**	**36.8**

11. PROJECT BENEFITS

- The industry will be established in the rural region of the state.
- The industry will provide skilled, semi-skilled, unskilled people, direct and indirect employment to more than 120 local rural persons.
- It can be stated that by this activity employment potential is certainly increasing in all walks of life – skilled, semi-skilled and unskilled.
- The importance and utility of alcohol is well known as an industrial raw material for manufacture of a variety of organic chemicals including pharmaceuticals, cosmetics, polymers etc.
- Alcohol is a potential fuel when blended with petrol. In the presence of ethanol, petrol burns with more efficiency and low toxic smoke.
- Alcohol is an eco-friendly product and is a substitute to the imported petroleum.
- As sugar cane cultivation is enhances in the country, the production of molasses from the sugar industry has greatly increased.
- Establishment of distillery will enable sugar factories to give better prices to the farmers supplying sugar cane.

12. CONCLUSION

- Proposed project does not attract rehabilitation and resettlement of people, since the proposed site is in existing sugar factory premises.
- Proposed project does not anticipate any adverse impacts on environment.
- Production process is environmentally safe as ZLD is proposed with efficient mitigation measures implemented.
- Air emissions through stack will be controlled by ESP.
- Loss of vegetation and habitat will not be attributed.
- Workplace/ operation hazards, which will be minimized by providing personal protective equipment's, safety precautions, emergency plan & disaster management plan.

Consequently, impacts on air, water, land and ecological environments are insignificant and the socio-economic benefits are predominantly positive.

Thus, overall project features, process, potential of pollution, pollution prevention measures and environmental management plan proposed by proponent illustrates that proposed project will not have any considerable impacts on environment as well as on socio-economic & ecological conditions of the project area. Therefore, proposed project is environmentally safe.